

# CLAIMS

We claim as our invention the following:

1. A method of manufacturing a golf ball comprising:

heating a golf ball precursor product such that the golf ball precursor

- 5 product undergoes volumetric thermal expansion; and

applying a cover over the thermally expanded golf ball precursor product

the cover formed by an exothermic reaction

2. The method according to claim 1 further comprising forming a golf ball precursor

10 product.

3. The method according to claim 2 wherein forming a golf ball precursor product

comprises forming a core and applying at least one boundary layer over the core.

- 15 4. The method according to claim 2 wherein forming a golf ball precursor product

comprises forming a core.

5. The method according to claim 1 wherein heating the golf ball precursor product

comprises convection heating the golf ball precursor product at a temperature within the range of

20 about 120 °F to about 180 °F.

6. The method according to claim 6 wherein heating the golf ball precursor product

comprises convection heating the golf ball precursor product at a temperature within the range of

about 140 °F to about 160 °F.

7. The method according to claim 1 wherein heating the golf ball precursor product comprises microwave heating the golf ball precursor product for a predetermined time period.

8. The method according to claim 3 wherein the at least one boundary layer  
5 comprises a thermoplastic elastomer.

9. The method according to claim 3 wherein the at least one boundary layer comprises an ionomer.

10. The method according to claim 1 wherein the cover comprises a thermoset material with a resin from the group consisting of Allyl Pthalates like Diallyl Pthalates, (DAP) and Diallyl Iso Pthalates, (DAIP); Aminos; Cyanates; Epoxies; Phenolics; Unsaturated Polyesters; Bismaleimides; Polyurethanes; Silicones; Urethane Hybrids; Vinyl Esters; Liquid Nylon and Polydicyclopentadienes.

11. The method according to claim 5 wherein heating the golf ball precursor product comprises convection heating the golf ball precursor product for about one hour.

12. The method according to claim 1 wherein heating the golf ball precursor product  
20 comprises convection heating the golf ball precursor product at a temperature and for a time period sufficient to achieve at least a 1.2% volumetric thermal expansion of the golf ball precursor product.

13. The method according to claim 2 wherein heating the golf ball precursor product comprises heating the golf ball precursor product during and after the forming the golf ball precursor product.

5 14. A method of manufacturing a golf ball comprising:

forming a core;

forming at least one boundary layer surrounding the core;

heating the core and the at least one boundary layer such that the core and the at least one boundary layer undergo volumetric thermal expansion;

10 applying a cover over the thermally expanded core and the at least one boundary layer, and

the cover formed by an exothermic reaction.

15 15. The method according to claim 14 wherein heating the core and the at least one boundary layer comprises convection heating the core and the at least one boundary layer to a temperature within the range of about 120 °F to about 180 °F.

20 16. The method according to claim 15 wherein heating the core and the at least one boundary layer comprises convection heating the core and the at least one boundary layer at temperature within the range of about 140 °F to about 160 °F.

17. The method according to claim 15 wherein heating the core and the at least one

boundary layer comprises convection heating the core and the at least one boundary layer for about one hour.

18. The method according to claim 14 wherein heating the core and the at least one boundary layer comprises heating the core and the at least one boundary layer at a temperature and for a time period sufficient to achieve at least a 1.2% volumetric thermal expansion of the core and the at least one boundary layer.

19. A method of manufacturing a golf ball comprising:

heating a golf ball precursor product such that the golf ball precursor product undergoes volumetric thermal expansion; and

applying a cover over the thermally expanded golf ball precursor product the cover formed by an exothermic reaction, and

the cover comprised of a thermoset material with a resin from the group consisting of Allyl Pthalates like Diallyl Pthalates, (DAP) and Diallyl Iso Pthalates, (DAIP); Amines; Cyanates; Epoxies; Phenolics; Unsaturated Polyesters; Bismaleimides; Polyurethanes; Silicones; Urethane Hybrids; Vinyl Esters; Liquid Nylon and Polydicyclopentadienes.

20. A golf ball having reduced susceptibility of cracking of a cover, the golf ball produced in accordance with the method comprising:

heating a golf ball precursor product at a predetermined temperature and for a predetermined time period to achieve a predetermined volumetric thermal expansion of the golf ball precursor product; and

applying a cover over the thermally expanded golf ball precursor product

21. The golf ball according to claim 20 further comprising forming a golf ball precursor product.

22. The golf ball according to claim 20 wherein heating the golf ball precursor product to a predetermined temperature comprises convection heating the golf ball precursor product to a temperature within the range of about 120 °F to about 180 °F.

23. The golf ball according to claim 21 wherein heating the golf ball precursor product to a predetermined temperature comprises convection heating the golf ball precursor product to a temperature within the range of about 140 °F to about 160 °F.

24. The golf ball according to claim 21 wherein forming a golf ball precursor product comprises forming a core and applying at least one boundary layer over the core.

25. The golf ball according to claim 24 wherein heating the golf ball precursor product to a predetermined temperature comprises microwave heating the golf ball precursor product.

26. The golf ball according to claim 24 wherein the at least one boundary layer is a thermoplastic elastomer.

27. The golf ball according to claim 26 wherein the thermoplastic elastomer is an ionomer.

28. The golf ball according to claim 20 wherein the cover is formed from a thermoset material.

29. A golf ball having reduced susceptibility of cracking of a cover, the golf ball  
5 produced in accordance with the method comprising:  
heating a golf ball precursor product at a predetermined temperature and  
for a predetermined time period to achieve a predetermined volumetric thermal expansion of the  
golf ball precursor product; and

applying a cover over the thermally expanded golf ball precursor product  
the cover comprised of a thermoset material with a resin from the group  
10 consisting of Allyl Pthalates like Diallyl Pthalates (DAP) and Diallyl Iso Pthalates (DAIP);  
Aminos; Cyanates; Epoxies; Phenolics; Unsaturated Polyesters; Bismaleimides; Polyurethanes;  
Silicones; Urethane Hybrids; Vinyl Esters; Liquid Nylon and Polydicyclopentadienes.